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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/067,208 04/28/98 HOWARD

W P-7860

EXAMINER

IM52/0731

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MINNEAPOLIS MN 55432

CREPEAU, J	
ART UNIT	PAPER NUMBER

1745
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16

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Applicati n No.

09/067,208

Applicant(s)

HOWARD, WILLIAM G.

Examiner

Jonathan S. Crepeau

Art Unit

1745

-- The MAILING DATE of this communication appears on the cov r sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 May 2001.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8, 10-17, 28-35, 37-44, 46-53, 55-62 and 92-101 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8, 10-17, 28-35, 37-44, 46-53, 55-62 and 92-101 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- 15) ☐ Notice of References Cited (PTO-892)
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 18) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 19) ☐ Notice of Informal Patent Application (PTO-152)
- 20) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. This Office action addresses claims 1-8, 10-17, 28-35, 37-44, 46-53, 55-62, and newly added claims 92-101 (renumbered from 91-100, pursuant to 37 CFR 1.126). Claims 11, 29, and 38 are newly rejected under 35 USC §112, second paragraph, as necessitated by amendment. Claims 1, 3-8, 10, 12-17, and 95-97 are rejected under 35 USC §102(b) over the parent '760 patent (Howard et al.), as necessitated by amendment. Claims 2, 11, 28-35, 37-44, 46-53, 55-62, 92-94, and 98-101 are newly rejected under 35 USC §103 over Takeuchi et al. in view of Howard et al., as also necessitated by amendment. Accordingly, this action is made final.

Claim Rejections - 35 USC § 112

2. Claims 11, 29, and 38 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The instant claims recite the terms "first height," "second height," and "third height." There is insufficient antecedent basis for these limitations in the claims.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 3-8, 10, 12-17, and 95-97 are rejected under 35 U.S.C. 102(b) as being unpatentable over Howard et al (U.S. Patent 5,439,760). In Figure 15, the reference teaches an electrode assembly having two substantially straight sides and comprising spirally-wound elongated anode and cathode assemblies. The anode assembly includes elongated strips of alkali metal (10, 15) and a current collector (5) which comprises nickel, copper, or an alloy thereof (see col. 5, lines 1-9). The cathode assembly includes a current collector (55) which comprises titanium (see col. 6, line 30). As shown in Figures 1 and 8, both current collectors have at least one tab extending away from the edges thereof. As disclosed in column 6, lines 1-16, the cathode material which is bonded to the cathode current collector comprises a solid reactive material (silver vanadium oxide), a binder material (PTFE) and a conductivity enhancer (carbon). Separator pouches (25, 75) form pockets around the anode and cathode assemblies through which the tabs extend, whereby two layers of separator material separate the anode and cathode (see col. 5, lines 33-49 and col. 6, lines 31-45). Each pocket is formed by folding the separator material sheet over a top edge of the electrode, conforming the material to the electrode, and joining the material to itself by heat-sealing. The outermost layer of the coil comprises an end segment of the anode assembly, such that at least a portion of the anode current collector is

disposed in the outermost layer (see col. 5, lines 4-6). As shown in Figure 10 and disclosed in column 6, lines 53-65, the length of the alkali metal strip (15) is longer than the length of the cathode current collector by an amount that enables the end segment of the anode assembly to be wound into the outermost layer.

Thus, the instant claims are anticipated.

Claim Rejections - 35 USC § 103

5. Claims 2, 11, 28-35, 37-44, 46-53, 55-62, 92-94, and 98-101 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takeuchi et al (U.S. Pat. 5,549,717) in view of Howard et al.

In Figure 4 and in column 3, line 36-column 4, line 55, Takeuchi et al. teach an electrode assembly having two substantially straight sides and comprising spirally-wound anode and cathode assemblies. The anode assembly comprises a nickel current collector (68) and lithium strips (64, 66). A tab (72) extends from the edge of current collector 68. Current collector 68 has a smaller length and width than the length and width of lithium strip 66 (see col. 4, line 39). The cathode assembly comprises silver vanadium oxide active material (47) which is embedded into a titanium current collector (54). The current collector 54 comprises tabs (48, 50) extending from the edges. Takeuchi et al. incorporate by reference the disclosure of Keister et al (U.S. Pat. 4,830,940), which discloses that the cathode can comprise a mixture of silver vanadium oxide, PTFE binder, and graphite powder conductivity enhancer (col. 8, lines 37-42 of Keister et al).

In column 4, line 26, Takeuchi et al. disclose that the separator surrounding the cathode assembly is sealed on all three open sides so that only the tabs project. In column 5, line 25, Takeuchi et al. disclose that alternatively, a separator may be folded around the anode assembly in a manner similar to the cathode assembly. In Figures 7, 8, and 10 and in column 5, line 63 et seq., the reference discloses that the portion of the anode (80) around the periphery of the electrode assembly (i.e., the “end segment”) requires only one lithium strip.

Takeuchi et al. do not explicitly teach that the anode current collector forms the outermost layer of the electrode assembly, or that the cathode current collector is shorter than the lithium strip by an amount that enables the end segment of the anode assembly to be wound into the outermost layer. Takeuchi et al. also do not explicitly teach the exact length of the anode current collector as a percentage of the length of the lithium strip, or that separators cover both the cathode and anode assemblies simultaneously.

Howard et al. teach pocket-type separators covering spirally wound anode and cathode assemblies in column 3, lines 37-46. Additionally, as set forth in section 4 above, Howard et al. teach in Figure 10 and in column 6, lines 53-65 that the length of the alkali metal strip (15) is longer than the length of the cathode current collector by an amount that enables the end segment of the anode assembly to be wound into the outermost layer.

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the patent of Howard et al. shows that using separators simultaneously on the anode and cathode assemblies is well known in the art. Although Takeuchi et al. in effect disclose that a separator is placed on either the anode or the

cathode assembly, the artisan would understand that covering both electrode assemblies (as shown by Howard et al.) would be an advantageous modification of the battery of Takeuchi et al. because dendrite protection would be increased and delamination of both active material layers would be decreased. As stated in Howard et al. at column 3, line 40, "[t]he separator pouch then prevents the transport of stray material in the cell which could cause a short circuit and the double thickness of the separator between anode and cathode elements better resists damage during the winding process". The separators are made by a folding and sealing method, as also set forth in section 4 above. Additionally, although Takeuchi et al. do not explicitly teach that tab(s) project through slits in the separators, this configuration is also clearly shown in Howard et al. and is considered to be obvious to the skilled artisan.

Furthermore, the disclosure of Takeuchi et al. provides sufficient guidance for the artisan to ascertain that the anode current collector forms the outer layer (winding) of the electrode assembly. As stated above, the reference discloses that the portion of the anode around the periphery of the electrode assembly requires only one lithium strip. From this disclosure, the artisan would be able to ascertain that the one lithium strip would be present on the inside portion of the anode current collector, in order to make contact with a corresponding cathode active material layer. Accordingly, it would be well within the skill of the art to ascertain that the anode current collector would form the outer layer of the electrode assembly. Additionally, it is noted that the Howard et al. reference is also concerned with the having the anode current collector in the outermost layer of the cell. Therefore, the way that Howard et al. achieve this configuration (by making the cathode current collector shorter than the lithium strip, as set forth

above) is deemed to be an obvious way of achieving this same configuration in the battery of Takeuchi et al.

Finally, the length of the current collector is a parameter which may be optimized by the artisan to achieve a particular result, i.e., the utilization rate of active material, current density, etc. It has been held that when the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation (*In re Aller, Lacey, and Hall*, 105 USPQ 233).

Response to Arguments

Applicant's arguments filed May 11, 2001 have been fully considered but they are not persuasive. Applicants state that the Takeuchi patent is "not applicable" because it is antedated by the parent '760 patent (Howard et al.). However, the instant claims all recite that the anode current collector is shorter than the alkali metal strip, which feature is not adequately supported by the '760 patent. Accordingly, since the instant claims are not directed to subject matter *solely* disclosed in the parent '760 application, the claims are only entitled to the filing date of the instant application. See *In re Chu*, 36 USPQ2d 1089 (Fed. Cir. 1995); and MPEP §201.11. Furthermore, the parent '760 patent qualifies as prior art under 35 USC §102(b), since it was published more than a year before the instant application was filed.

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, THIS ACTION IS MADE FINAL. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan Crepeau whose telephone number is (703) 305-0051. The examiner can normally be reached Monday-Friday from 9:30 AM - 6:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gabrielle Brouillette, can be reached at (703) 308-0756. The phone number for the organization where this application or proceeding is assigned is (703) 305-5900. Additionally, documents may be faxed to (703) 305-3599.

Application/Control Number: 09/067,208
Art Unit: 1745

Page 9

Any inquiry of general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

JSC

July 26, 2001


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SUPERVISORY PATENT EXAMINER
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